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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,522	12/21/2001	Hiroki Nakahira	04995/045001	9282

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EXAMINER	
KOSOWSKI, ALEXANDER J	
ART UNIT	**PAPER NUMBER**
2125	

DATE MAILED: 05/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/051,522	NAKAHIRA ET AL.	
	Examiner	Art Unit	
	Alexander J Kosowski	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *3-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1) Claims 1-9 are presented for examination.

Specification

2) The disclosure is objected to because of the following informalities:

Page 2, line 8 uses the word "apparatuss". The word should be --apparatuses--.

Page 2 lines 11 and 14, the phrases "in case where" should read --in the case where--.

Page 15, line 14, the phrase "in case where" should read --in the case where--.

Appropriate correction is required.

Claim Objections

3) Claims 3-7 and 8-9 are objected to because of the following informalities:

Referring to claims 3-7, each claim has a period before listing equations which are meant to be part of the claims. The periods should be replaced with semicolons, and a period should be added after the equations.

Referring to claims 8 and 9, the claims both state "with respective". They should read --with respect--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5) Claims 5, 7 and 9 are rejected under 35 U.S.C. 112.

Claim 5 recites the limitations "L1", "L2", "L3" and "L4". There is insufficient antecedent basis for these limitations in the claim. This is a multiple dependent claim, and as

such it must be able to depend on any one of claims 1-4. If claim 5 were to be dependent on claim 1, for instance, there would be a lack of antecedent basis, as the variables "L1" through "L4" are not defined.

Claim 7 recites the limitation "the turret". There is no antecedent basis for this limitation.

Claim 9 recites the limitation "said X-axis offset value" in line 8. There is insufficient antecedent basis for this limitation in the claim. This is a multiple dependent claim, and as such it must able to depend on either claim 7 or claim 8. If claim 9 were dependent on claim 8, there would be a lack of antecedent basis.

Claim Rejections - 35 USC § 103

6) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7) Claims 1-2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hisao (Translation of Japanese publication number 05-158515), further in view of Kiya (U.S. Pat 4,776,247).

Referring to claim 1, Hisao discloses a control apparatus for numerical control adapted for a cutting machine having a turret which can be turned to an arbitrary position, wherein an X-axis offset value and a Z-axis offset value of a cutting edge of a cutting tool on coordinates with respect to said cutting machine are calculated in accordance with a turning angle of said turret (Abstract, Paragraph 0006 and Paragraph 0009). However, Hisao does not explicitly teach indicating the X-axis and Z-axis offset values on a display.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby determined offset values are displayed on a display screen of the NC apparatus (col. 3 lines 21-26).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to display the X-axis and Z-axis offset values taught by Hisao on a display since this would allow an operator to view the resulting offsets, and potentially allow the operator to add, revise or delete values as desired (Kiya, col. 3 lines 17-20).

Referring to claim 2, Hisao discloses the apparatus above. However, Hisao does not explicitly teach that X-axis wear compensation values and Z-axis wear compensation values are indicated in relation to said X-axis offset value and said Z-axis offset value.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby wear compensation values are established (col. 3 lines 3-11).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize wear compensation values in the apparatus taught by Hisao since this would allow offset amounts to be adjusted to take into account wear on the tool being used (Kiya, col. 3 lines 3-5), which would lead to more accurate cutting.

Referring to claim 8, Hisao discloses a control apparatus for numerical control adapted for a cutting machine in which a cutting tool is rotated around the tool axis to an arbitrary position, wherein a Y-axis offset value of a cutting edge of said cutting tool on a coordinate with respect to said cutting machine is calculated in accordance with a rotation angle of said cutting tool (Abstract, Paragraph 0006 and Paragraph 0009, whereby a Y-axis can be interpreted as any

axis, depending on coordinate orientation). However, Hisao does not explicitly teach that the offset value is indicated on a display.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby determined offset values are displayed on a display screen of the NC apparatus (col. 3 lines 21-26).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to display the offset values taught by Hisao on a display since this would allow an operator to view the resulting offsets, and potentially allow the operator to add, revise or delete values as desired (Kiya, col. 3 lines 17-20).

8) Claims 3-4, 5-6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hisao and Kiya as shown above, further in view of Naoki et al (Translated Japanese publication number 2000-141164).

Referring to claim 3, Hisao and Kiya disclose the apparatus above. In addition, Hisao discloses equations utilizing different values and angles used to compute offsets (Paragraphs 0013 through 0015). However, Hisao and Kiya do not explicitly teach the specific equation limitations in claim 3.

Naoki teaches a control apparatus for numerical control adapted for a cutting machine having a turret which can be turned to an arbitrary position whereby there is a turning angle (Paragraph 0021), an X-axis value of the tool and an Z-axis value of the turret (Drawing 12), and a Z-axis value of the tool and a Z-axis value of the turret (Drawing 10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize X-axis and Z-axis values of the tool and turret as values in the invention

taught by Hisao and Kiya since tool and turret dimensions are critical to determining distances to the cutting edge of a tool in a cutting machine having a turret.

In addition, it is respectfully submitted that the use of formulas such as those in claim 3 which contain the trigonometric functions sine and cosine to determine what is effectively coordinates for a vector based on angles of rotation are well known in the art, and that the skilled artisan could have used any plurality of values, in addition to the angle of rotation, to calculate coordinate offsets in the apparatus taught by Hisao and Kiya since a tool correction value which automatically changes according to the angle of a tool makes numerical control easier (Naoki, Paragraph 0059), and since some form of equations are necessary to compute an offset based upon multiple variables.

Referring to claim 4, see rejection of claim 3 above.

Referring to claim 5, Hisao and Kiya disclose the apparatus above. In addition, Hisao discloses that the cutting tool can be rotated around the tool axis to an arbitrary position (Paragraph 0006), and that X-axis and Z-axis offset values are calculated dependent on angle of rotation (Paragraph 0009). Also, as shown above in claim 1, Hisao and Kiya can be combined to disclose indicating the offset values on a display. However, Hisao and Kiya do not explicitly teach the specific equation limitations in claim 5.

Naoki teaches a control apparatus for numerical control adapted for a cutting machine having a turret which can be turned to an arbitrary position whereby there is a turning angle (Paragraph 0021), an X-axis value of the cutting edge and of the turret (Drawing 12), and a Z-axis value of the tool and a Z-axis value of the turret (Drawing 10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize X-axis and Z-axis values of the cutting edge, tool and turret as values in the invention taught by Hisao and Kiya since tool and turret dimensions are critical to determining distances to the cutting edge of a tool in a cutting machine having a turret.

In addition, it is respectfully submitted that the use of formulas such as those in claim 5 which contain the trigonometric functions sine and cosine to determine what is effectively coordinates for a vector based on angles of rotation are well known in the art, and that the skilled artisan could have used any plurality of values, in addition to the angle of rotation, to calculate coordinate offsets in the apparatus taught by Hisao and Kiya since a tool correction value which automatically changes according to the angle of a tool makes numerical control easier (Naoki, Paragraph 0059), and since some form of equations are necessary to compute an offset based upon multiple variables.

Referring to claim 6, Hisao discloses a method of indicating an X-axis offset value and a Z-axis offset value of a cutting edge of a cutting tool, in a control apparatus for a cutting machine having a turret which can be turned to an arbitrary position (Abstract, Paragraph 0006 and Paragraph 0009), the method comprising calculating X-axis and Z-axis offset values based upon length values and a turning angle (Paragraph 0006) and storing values in memory (Paragraph 0006). However, Hisao does not explicitly teach the specific equation limitations in claim 3, nor indicating the offset values.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby determined offset values are displayed on a display screen of the NC apparatus (col. 3 lines 21-26).

Naoki teaches a control apparatus for numerical control adapted for a cutting machine having a turret which can be turned to an arbitrary position whereby there is a turning angle (Paragraph 0021), an X-axis value of the tool and an Z-axis value of the turret (Drawing 12), and a Z-axis value of the tool and a Z-axis value of the turret (Drawing 10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize X-axis and Z-axis values of the tool and turret as values in the invention taught by Hisao and Kiya since tool and turret dimensions are critical to determining distances to the cutting edge of a tool in a cutting machine having a turret.

Therefore, it would also have been obvious to one skilled in the art at the time the invention was made to display the offset values taught by Hisao on a display since this would allow an operator to view the resulting offsets, and potentially allow the operator to add, revise or delete values as desired (Kiya, col. 3 lines 17-20).

In addition, it is respectfully submitted that the use of formulas such as those in claim 6 which contain the trigonometric functions sine and cosine to determine what is effectively coordinates for a vector based on angles of rotation are well known in the art, and that the skilled artisan could have used any plurality of values, in addition to the angle of rotation, to calculate coordinate offsets in the apparatus taught by Hisao and Kiya since a tool correction value which automatically changes according to the angle of a tool makes numerical control easier (Naoki, Paragraph 0059), and since some form of equations are necessary to compute an offset based upon multiple variables.

Referring to claim 7, Hisao discloses a control apparatus for numerical control adapted for a cutting machine in which a cutting tool is rotated around the tool axis thereof to an arbitrary

position, wherein an X-axis value of a cutting edge of said cutting tool on a coordinate with respect to said cutting machine is calculated in accordance with a rotation angle of said cutting tool (Abstract and Paragraph 0006) and an X-axis offset value after the rotation is calculated using equations (Paragraph 0014-0016). However, Hisao does not explicitly teach the specific equation limitations shown in claim 7, nor that the offset value is indicated on a display.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby determined offset values are displayed on a display screen of the NC apparatus (col. 3 lines 21-26).

Naoki teaches a control apparatus for numerical control adapted for a cutting machine having a turret which can be turned to an arbitrary position whereby there is a turning angle (Paragraph 0021), and an X-axis value of the tool and an Z-axis value of the turret (Drawing 12).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize X-axis values of the tool and turret as values in the invention taught by Hisao and Kiya since tool and turret dimensions are critical to determining distances to the cutting edge of a tool in a cutting machine having a turret.

Therefore, it would also have been obvious to one skilled in the art at the time the invention was made to display the offset values taught by Hisao on a display since this would allow an operator to view the resulting offsets, and potentially allow the operator to add, revise or delete values as desired (Kiya, col. 3 lines 17-20).

In addition, it is respectfully submitted that the use of formulas such as those in claim 7 which contain trigonometric functions to determine what is effectively coordinates for a vector based on angles of rotation are well known in the art, and that the skilled artisan could have used

any plurality of values, in addition to the angle of rotation, to calculate coordinate offsets in the apparatus taught by Hisao and Kiya since a tool correction value which automatically changes according to the angle of a tool makes numerical control easier (Naoki, Paragraph 0059), and since some form of equations are necessary to compute an offset based upon multiple variables.

Referring to claim 9, Hisao discloses that a Y-axis offset value of said cutting edge of said cutting tool on coordinates with respect to said cutting machine is calculated in accordance with the rotation angle of said cutting tool (Abstract and Paragraph 0006, whereby a Y-axis can be interpreted as any axis, depending on coordinate orientation). However, Hisao does not explicitly teach a Y-axis wear compensation value and a X-axis wear compensation value are indicated in relation to said X-axis offset value and said Y-axis offset value after the rotation.

Kiya teaches a control apparatus for numerical control machining using a lathe whereby wear compensation values are established (col. 3 lines 3-11).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize wear compensation values in the apparatus taught by Hisao since this would allow offset amounts to be adjusted to take into account wear on the tool being used (Kiya, col. 3 lines 3-5), which would lead to more accurate cutting.

Conclusion

9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703-308-0538. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7239 for After Final communications. In addition, the examiner's RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125

5-20-07

ALBERT W. PALADINI
PRIMARY EXAMINER